



**TAIWAN PROGRAM 2019
EXPRESSIONS OF INTEREST**

CSIC SCIENTIFIC SUPERVISOR: GERVASI HERRANZ	
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INSTITUTE/CENTER NAME: Institute for Materials Science of Barcelona ICMAB-CSIC	
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BRIEF DESCRIPTION OF THE RESEARCH GROUP: The Laboratory of Multifunctional Thin Films and Complex Structures (MULFOX)) is composed of about 20 people, including master's and PhD students, postdocs, technicians and several staff researchers. The MULFOX group focuses its research on developing new oxide-based materials with enhanced or emerging properties with especial focus on their electric, magnetic and optical properties, and to establish the links between their structure, morphology and functional properties (see more info at the website https://departments.icmab.es/mulfox/). The MULFOX member that will be involved in this project is Dr. Gervasi Herranz (https://publons.com/researcher/G-2770-2014/ ; ORCID: https://orcid.org/0000-0003-4633-4367 , see also https://gervasi-herranz.blog/).	
CENTER/RESEARCH GROUP'S WEBSITE: https://departments.icmab.es/mulfox/	
NUMBER OF STUDENTS WILLING TO WELCOME: 1-2	
BRIEF DESCRIPTION OF THE STUDENT ACADEMIC BACKGROUND: The candidate should hold a degree in Physics, Materials Science or similar, and speak English fluently. Background in solid-state physics and optics/photonics is recommended.	
BRIEF DESCRIPTION OF THE STUDENTS TASK: The main task is to perform photolithography of electronic devices for neuromorphic computation. Neuromorphic computation aims at replicating in physical systems the fundamental features of biological neurons and synapses. Recently, we have demonstrated that optical artificial synapses can be synthesized using the photoresponse of some materials. To exploit these properties, optical and e-beam lithography is required to define the electronic devices that are used as elements of neuromorphic computation to create eventually artificial neural networks. With this in mind, we need a good electrical isolation between the different artificial synapses to have an optimal operation. The student will be in charge of defining an efficient photolithographic process involving chemical and solvents that can define an optimal route towards the synthesis of devices with dimensions in the scale of microns or even smaller. The successful candidate will learn the methods used in optical and electron beam lithography, and also will be acquainted with the optical and transport methods that we use to characterize the optical artificial synapses.	

€1 000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS



Responsible Researcher:

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Center Director:

A handwritten signature in blue ink, featuring a large, sweeping initial 'C' followed by several fluid strokes.

ICU Manager:



A handwritten signature in blue ink, written over the official seal, consisting of several fluid, overlapping strokes.